Remarks

While the applicant has further amended the claims due to the examiners final rejection in an effort to obtain allowance, the applicant maintains, that perhaps aside from containing wording irregularities, the original claims clearly and distinctly define a novel and non-obvious invention. The examiner stated in the final rejection point 6 "*claims 20-24 and 26-27 were rejected on the basis of being anticipated by Amerson et al*", and in point 8, *Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amerson et al. in view of Lys et al.* and also stated in point 9 that the "*arguments filed on 10 May 2005 have been fully considered but they are not persuasive*". The examiner has not given an explanation why the arguments are not persuasive in light of the applicants explanations offered in the reply of May 10th 2005 and the applicant submits that the final rejection status is unjustified. The applicant asks for reconsideration and maintains the veracity of the initial arguments. This in light of the fact that a hand held camera flash, especially the one disclosed by Amerson with congruent light source aimings, is not intended to, not constructed to and cannot function as an illumination device capable of illuminating an environment comprised of surfaces non-equidistant from the light source according to correct principles of lighting practice (see par. 0013). For instance, an example of correct lighting practice for a lighting application may be the uniformity of the illumination over an area (see par. 0021). Below are additional arguments offered by the applicant on a claim by claim basis which serve to backup the original and newly amended claims.

Regarding claim 20, Amerson et al. discloses an illuminating device having a plurality of light sources [402, 404] attached to a structure with a predetermined form [rectangular], which have a spatial light intensity distribution characteristic and a mixing, adding and distribution of emanating light (figures 4-6, column 2 lines 62-67, column 3 lines 20-33 and 40-44).

(In this review the examiners text in-full is positioned next to the arguments and the differences underlined). Claim 20: Although some of the words to used describe Amerson's device may be the same as the claim, the specific features detailed in exact reading of claim 20 restrict its scope to a specific and totally different device. Claim 20 clearly stated the novelty of the inventive structure of

the device shown in Fig. 2B where the multiple light source illumination device of present invention has a structure having <u>"predetermined form and orientation" based on the lighting environment it is going to be used therein, and that structure has a means for having the orientation "correlated to said environment" and the light sources are "attached to the structure so as to have a spatial light intensity distribution" in concert with the environment</u> based on the correlated orientation. In other words, the independent light sources having their respective substantial directionality (see par. [0072]) are aimed in different directions relative to each other such that "the directionality effects the mixing, adding and distribution of emanating light". (For an explanation of an example of what is meant by "predetermined form" see specification [0077]. For an example of <u>means for having the orientation "correlated to said environment"</u> see specification paragraphs [0110] and [0111] and the effect in [0113]. Nowhere in his specification does Amerson mention the environment or orientation to that environment.

> *Regarding claim 23, Amerson et al. discloses an illuminating device having a plurality of independent light sources [402, 404] attached to a structure with a predetermined form [rectangular], which have a spatial light intensity distribution characteristic and a mixing, adding and distribution of emanating color light (abstract, figures 1-6, column 2 lines 62-67, column 3 lines 20-33 and 40-44).*

The statement "said directionality effects the mixing, adding and distribution of emanating light" is not only true for combinations effecting the light intensity but also for color mixing as well with an example of the benefit having been described in paragraph [0115]; "Constant color is maintained in a room with an influx of a less desirable color temperature light on one side." Claim 23 (based on Claim 20)clearly describes how the *plurality of independent light sources are attached to the structure* in concert with the design requirements of the lighting environment in a way totally different from the simple congruent *array of LEDs* proposed by Amerson *(column 2 lines 62).*

Amersons shape in Fig 4 just happens to be rectangular and <u>is in no way "correlate"-able to the environment</u>, (the photographer can take a "portrait" or "landscape" shot and tilt

the camera any way in relation to the "environment" which in all cases is assumed to be an equidistant point object, and is insensitive to orientation. In the present invention the differentiated directionality of the light sources is facilitated by their respective mountings on the illuminating device structure (see Fig 2B and par. [0109] & [0110]). So in some way the structure is related to the light source mounting for directionality. As the light source directionalities, or aimings, are meant to provide illumination according to the requirements of the environment they are designed to illuminate it follows that the structure's orientation within the environment must be a known either in the design stage, based on its fixturing [for example as described in 0080] within that environment or varying position in real time via sensors par. [0166]. Thus it follows the orientation of the structure "is capable of being correlated to said environment" which is totally absent from the Amerson device

To illustrate the difference between devices for illumination as taught by the applicant's invention versus that of Amerson more clearly, a new flash for a camera made according to the novel and non-obvious method and apparatus disclosed in this patent is described. *"An auxiliary illuminating device that has adjustable color temperature" (from Amerson's abstract)* would have *"independently adjustable"* light sources respectively having substantial directionality of light emanation deployed at different aimings, (and even if mounted on a rectangular flat PCB which is easy to manufacture, they would be bent to different aimings as shown in Fig. 2C explained in paragraph [0116]) in order to provide for more than one spatial light intensity distribution possibility. Therefore a "digital" or Multiple Solid-state Light Source (MSLS), camera flash of the present invention aimed to photograph a scene with many non-equidistant objects (versus photographing a single object such as a person) would employ differently aimed light sources to illuminate the non-equidistant surfaces in the scene to be photographed than it would for illuminating the single object; this in order to obtain optimum (e.g.uniform) illumination over the scene. (In actuality this new flash is somewhat similar to the headlight illuminating device shown in Fig. 15 and described in paragraph [0186 and 0187]).

A measuring means in the camera similar to the sensor pack described in [109] capable of assessing the distances of more than one object in the scene to be illuminated could adjust the light intensity from light sources with correct aiming to adjust for the correct illumination in real time. Not only would spectral considerations be considered but spatial light distribution as well would be "adjusted for changes in the environment" as described in Claim 22. Amerson has the light sensor but it is not as per par. [0151] one that is "spatially differentiated ... light sensors 196". He has no means to acquire spatially differentiated measurements nor "a means for changing the light emanating characteristics of the individual light sources, thereby providing the correct intensity, spectrum, and spatial distribution of intensity and spectrum as a function of time. Amerson has no adjustment on the spatial distribution of the intensity or color. He is not capable of adjustment of spatially differentiated spectral *light emanating characteristic of light sources* in accordance with the principles of lighting practice (Claim 22 is dependant on Claim 21 and thus does not "read" on Amerson).

Regarding claim 22, Amerson et al. discloses a spectral sensitivity camera and a means for changing light emanating characteristic of light sources (figures 1-3, column 3 lines 19-25, column 4 lines 35-53, and column 5 lines 40-45).

An orientation deducing sensor would determine the flash geometric orientation to that of that of the scene (for example it he photographer is holding the camera in "landscape" or "portrait" position) and would employ the correctly aimed light sources to get an optimal lighting for the scene. This would include the possibility for providing different color spectrum for different parts of the scene so as to optimize lighting for background scenery vs. a person in the foreground or some other photographic effect. In this instance the said "orientation deducing device" would serve as the means for having the orientation "correlated to said environment" as stated in Claim 20.

Thus in truth Amerson's device is an inferior flash device when one considers what could be done with *a plurality of individual light sources* and the camera-flash lighting-

application at hand and is not in the full sense "a lighting application oriented luminaire constructed according to principles of lighting practice" (Claim 21) Amerson's device misses out on the inherent flexibility offered by using a plurality of individual light sources captured in the present disclosure. It is clear that Amerson's device per Fig. 4 and 5 is incapable of providing either the uniform illumination or color variation over different areas of the scene. As a matter of fact he describes the problem as being without solution *"The power or intensity of the flash is typically angle dependent. This means that the flash illuminants the center of the scene more than the edges of the scene. ... ". (Amerson column 2 lines 10-19).* It is evident that Amerson who is skilled in the art did not anticipate the method and apparatus of the present invention to construct improved camera flash device according to the principles of lighting practice with an ability to uniformly illuminate, both spectrally and intensity wise, scenes containing surfaces non-equidistant from the flash. It is also not obvious to illumination practitioners of ordinary skill in the art at the time this invention was made to realize the ability to utilize the angular and spectral independence of already differentiated multiple light sources to effect the fine control of illumination color and intensity.

Regarding claim 21 Amerson et al. discloses a plurality of individual light sources [402, 404] (figures 4 and 5, column 2 lines 62-67).

Claim 24 the power supply is unique and is clearly described in the specification as in par. [0035] and [0101]. The reference power supply is not to the current source as in a battery but rather with the current's conditioning electronics affecting its magnitude, signal shape and timing and in its novel integration in an illuminating device comprised of electronic light sources made of diode junctions. It has nothing to do with the power supply "battery" which not the intention of the wording in the claim as is clear from the specification.

Regarding claim 24, Amerson et al. discloses a power supply [battery] (column 5 lines 51-52).

Regarding claim 26, Amerson et al. discloses a method.... The method for constructing the new camera flash device comprised of a plurality of independent light sources providing controlled illumination in an environment to be illuminated in accordance with a lighting application per Claim 26 would be as follows:

> *Regarding claim 26, Amerson et al. discloses a method for designing an application oriented luminaire having determining application and illuminance requirement [capture an image with a digital camera], determining illumination area [object to be capture], and determining light source aiming [LEDs] (figure 4, column I lines 11-67, column 2 lines 1-37).*

a) determining the illuminance and spectral requirements for the <u>lighting application,</u> photography, in an <u>environment</u>, (a step which consists of a lot more than "*[capture an image with a digital camera] (per the examiner)*" at the *center of the scene (Amerson Col. 2 line 11)*. The environment consists of many objects not at the center with many more characteristics than just the color temperature of the ambient light *(Amerson col. 3 line 14)*).

b) determining the <u>illumination area</u> "*[object to be capture] (per the examiner)*" (which for the new flash built according to the principles of this invention would depend on the field of view provided by the camera lens optics, and the design's power capacity to illuminate out to a certain distance. This step is not taken by Amerson as he specifically states that he is only illuminating the *center of the scene (Amerson Col. 2 line 11)* no attempt is made to properly illuminate the *edges of the scene*. So he has no need for this step.

c) determining light source aimings and spectral composition which provide the illumination requirements "*[LEDs]] (per the examiner)*" . Amerson Fig 4 has a flat *array (Amerson Col. 2 line 63)* of congruently aimed LEDs and does not need a step to determine the aimings.

Thus claim 26 does not "read" on Amerson because it is useful only for an illumination device comprised of a plurality of light sources where the light sources having substantial directionality (see par. [0072]) are given independent aimings in correlation to the

lighting environment. Amerson makes not attempt to cover spatial distribution by separate aimings and his method Fig.6 determined only the ambient color temperature while the applicants Fig. 14 covers the full range of steps required for illumination according to lighting principles and made possible by the novel means and apparatus detailed in the disclosure.

Regarding claim 27, Amerson et al. discloses steps of determining lighting application and recommended lighting practice for the application [capture an image with a digital camera], determining luminaire mounting height [figure 4], determining light power required [light intensity control], selecting SLS types [color R, G, B LEDs], determining electronics to control [control system], determining lighting fixture surface geometry [rectangular, figure 4], and determining glare rating [light intensity control] (abstract, figures 1 - 6, column 1 lines 11-67, column 2 lines 1-37).

Claim 27 adds specific design features never conceived by Amerson because his apparatus is a point source illuminating an object with all points equidistant. The step of *determining luminaire mounting height [figure 4] (per the examiner)* simply does not exist in Amerson, he is not covering an area with closer and farther away object to be illuminated and he will not determine the mounting height. There is no cosine of the angle to be computed in his equations to determine spatial candle power distribution of the illuminator (see par. [0015]) his angle is zero and value is always one. The mounting height in Claim 27 refers to the height of a luminaire within the illuminated environment (see specification par. [0081] and [0160]) and has nothing to do with Fig. 4. The same goes for the supposed step *determining light power required [light intensity control]] (per the examiner),* Amerson cannot determine the intensity required at angles away from the center, his apparatus does not have light sources aimed there. While he will be *selecting SLS types [color R, G, B LEDs]* this will not have the process of the rest of the claim selecting light source types capable of producing required intensities and spectrum at highest conversion efficiencies at lowest economic cost. The step of *determining electronics to control [control system]*

is a totally different system when spatial intensity distribution is controlled (see claim 24 above), The step of *determining lighting fixture surface geometry [rectangular, figure 4] (per the examiner)* has been explained to be non-relevant in claim 20 above and in addition "size" would be a factor in luminance which is totally ignored by Amerson as is typical with a camera flash lighting application. Finally *determining glare rating [light intensity control] (abstract, figures 1 -6, column 1 lines 11-67, column 2 lines 1-37),* Amerson never mentions glare in the specification and camera flashes are allowed to glare so this step would not be operated in his specific lighting application. Glare is calculated for many illuminating applications as described in par. [0013] and [0083] according to the principles of lighting practice but unique to this method, the glare rating of the luminaire is changeable by varying the light source by the selection of SLS intensities and their positioning on the luminaire structure. In normal luminaire design the light source is given and shading or optics such as lenses and diffusers are used to reduce the glare. Thus it has been shown that Claim 27 clearly describes a unique design method relevant only to multiple light source illumination devices having angularly differentiated light source mounted thereon as disclosed in this invention.

Conclusion

The applicant has revised the claims and requests that the above claims now be amended as in new claims 28 -35. The applicant submits that the claims are now in proper form to place the case in condition for allowance which action he respectfully solicits.

Conditional Request for Constructive Assistance

Should the examiner still prefer to have these or any or any other claims amended to more clearly highlight the uniqueness of the present invention, the pro se applicant requests under M.P.E.P. § 2173.02 and §707.07(j) that the examiner should draft one or more claims for the applicant and indicate in his or her action that such claims would be allowed if incorporated in the application by amendment. This request is in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,

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